



# The Fifth Foresight Conference on Molecular Nanotechnology

November 5-8, 1997; Palo Alto, CA

## • This page now serves as an archive for the 1997 conference.

- [Abstracts of Talks and Posters](#)
- [Full Papers submitted from the Conference](#)
- [Update 31 reports on the Conference](#)
- <http://nanosoft.simplenet.com/nanovid.htm>: it is now possible to watch videos over the Web of two talks from the Conference. At this site, you can use your computer to watch Ralph Merkle's introduction to the Conference and Richard Smalley's keynote address. There are two versions of each speech: a 28.8 version for modem users and an ISDN version for those with faster connections. Instructions for programs needed to watch the video are available at the above url.

## • The Next Conference

The Sixth Foresight Conference on Molecular Nanotechnology will be held November 13-15 1998, at the Westin Hotel in Santa Clara, CA. The Tutorial will be on November 12, 1998. Information is available on the web at <http://www.foresight.org/Conferences/MNT6/index.html>.

## • Video tapes

Video tapes of the conference are available from Sound Photosynthesis, POB 2111 Mill Valley, CA 94942-2111, USA; 1-415-332-1533; [faustin@sound.photosynthesis.com](mailto:faustin@sound.photosynthesis.com). Sound Photosynthesis also offers a Richard Feynman page, where the videotape of Feynman's lecture "tiny machines" about nanotechnology appears.

# The 1997 Conference Archive

Conference Co-chairs: **Ralph C. Merkle**

Xerox Palo Alto Research Center

**Al Globus**

MRJ, Inc./NASA Ames Research Center

---

- [General](#)
- [Topics Covered](#)
- [Invited Speakers](#)
- [Sponsors](#)
- [Program Committee](#)
- [1997 Feynman Prizes Awarded](#)

---

- [Tutorial on Molecular Nanotechnology](#)
- [Time, Place, Lodging, Travel](#)
- [Abstracts and Papers](#)
- [Registration Information](#)
- [Speaker Schedule](#)

## • General

The conference began with a reception the evening of Nov. 5. It was a multidisciplinary meeting on molecular nanotechnology, that is, thorough three-dimensional structural control of materials and devices at the molecular level. Attendees included chemists, materials scientists, physicists, engineers, computer scientists and others interested in learning about the field and participating in its development.

- The keynote speaker was **Richard Smalley**, 1996 Nobel Prize for Chemistry.
- An intensive Tutorial on Critical Enabling Technologies for Nanotechnology was available prior to the conference reception.
- The Abstracts for Talks and Posters presented at the conference are available. Index of full papers is also available.
- The previous conference provides an example of the activities and purposes of the Foresight conference series.
- The next conference in this series will be held next year, not in two years as previously. The Sixth Foresight Conference on Molecular Nanotechnology will be held on November 13, 14, 15, 1998 at the Westin Hotel in Santa Clara, CA. The Tutorial will be on November 12, 1998.

## • Topics Covered

This conference was a meeting of scientists and technologists working in fields leading toward molecular nanotechnology: thorough three-dimensional structural control of materials and devices at the molecular level. The conference covered topics relevant to the pursuit of molecular control:

- supramolecular chemistry and self-assembly
- proximal probes (e.g. STM, AFM)
- biochemistry and protein engineering
- computational chemistry and molecular modeling
- computer science (e.g. computational models, system design issues)

- fullerene nanotechnology
- natural molecular machines (e.g. flagellar motor)
- materials science
- mechanical engineering (CAD) and robotics

## • Invited Speakers:

### Richard Smalley (keynote)

(1996 Nobel Prize for Chemistry)

Center for Nanoscale Science and Technology

Rice University

### Phaedon Avouris

IBM Research Division

T.J. Watson Research Center

### Donald W. Brenner

Materials Science and Engineering Department

North Carolina State University

### K. Eric Drexler

Institute for Molecular Manufacturing

### M. Reza Ghadiri

The Scripps Research Institute

### James Gimzewski (also)

IBM Research Division

Zurich Research Laboratory

### Al Globus MRJ, Inc.

Computational Molecular Nanotechnology Group

NASA Ames Research Center

### William A. Goddard III

Materials and Process Simulation Center

California Institute of Technology

### Ralph C. Merkle

Xerox Palo Alto Research Center

### Rod Ruoff

Washington Univ Lab. for the  
Study of Novel Carbon Materials

### Nadrian C. Seeman

(1995 Feynman Conference Prize Winner)

New York University

### Deepak Srivastava

Computational Molecular Nanotechnology Group  
NASA Ames Research Center

### James M. Tour

University of South Carolina

### Boris I. Yakobson

North Carolina State University

## • Sponsor

### Foresight Institute

### • General Corporate Sponsor

### Beckman Instruments

Beckman provides quality products and services that simplify or automate laboratory processes resulting in improved customer productivity and efficiency to the following selected market segments: Bioresearch/Biotechnology; Clinical Diagnostics

## Sun Microsystems

Founded in 1982 by four idealistic young pioneers with a shared vision of decentralized, heterogenous computing systems, Sun Microsystems, Inc. has emerged as a global Fortune 500 leader in enterprise network computing, with over \$8 billion in revenues and operations in 150 countries.

### • Supporting Corporate Sponsors

#### AMP

AMP Incorporated (NYSE: AMP) is the world leader in the design and manufacture of electrical and electronic connectors and interconnection systems. Headquartered in Harrisburg, PA, AMP has 45,000 employees in 50 countries in Europe, Asia/Pacific and the Americas and serves customers in these industries: automotive, aerospace, computer networking, power and utilities, telecommunications, industrial and consumer goods. AMP had sales of \$5.47 billion in 1996.

#### Apple Computer

Apple Computer is the technology-leading computer hardware and software company. Apple has been a sponsor of previous conferences.

#### Ford Motor Company

Ford Motor Company is the world's second largest maker of autos and trucks, with other interests including plastics and electronics.

#### JEOL

JEOL Inc. is the Japan-based maker of electron microscopes, mass spectrometers, and other precision electronic equipment.

#### Park Scientific Instruments

Park Scientific Instruments (PSI) was founded in 1988 by Stanford University researchers to develop commercial instrumentation for scanning probe microscopy (SPM). Over the last 9 years, PSI has become the worldwide technology leader in atomic force microscopes (AFM) and scanning tunneling microscopes (STM) used in both ambient and ultra-high vacuum.

#### Zyvex

Zyvex is the first research and development company focused on developing an assembler for molecular nanotechnology. Started in April 1997, and headquartered in Richardson Texas, the company has hired its initial researchers and is building a lab capable of the task it has set itself. In spite of being a small company, with less than \$20M in funding, Zyvex plans to achieve its goal in less than 10 years.

### • *For more information about becoming a corporate sponsor, please contact the Foresight Institute*

## • Cosponsors

Argonne Mathematics and Computer Science Division  
Caltech Materials and Process Simulation Center  
Carnegie Mellon School of Computer Science  
Elba Foundation (Italy)  
Institute for Molecular Manufacturing  
Lawrence Berkeley National Laboratory NERSC  
The MITRE Corporation  
Molecular Graphics Society of the Americas  
NASA Ames Numerical Aerospace Simulation Systems Division  
Ohio Supercomputer Center  
Rice Univ. Center for Nanoscale Science and Technology  
Royal Melbourne Institute of Technology Dept. of Computer Science  
San Diego Supercomputer Center  
Stanford Univ. Dept. of Materials Science and Engineering  
USC Molecular Robotics Lab  
University of Wisconsin-Madison  
Washington Univ Lab. for the Study of Novel Carbon Materials

## • Program Committee

**Phaedon Avouris**  
IBM Research Division

**Charles W. Bauschlicher, Jr.**  
NASA Ames Research Center

**Donald W. Brenner**  
North Carolina State University

**Eric Drexler**  
Institute for Molecular Manufacturing

**William A. Goddard III**  
California Institute of Technology

**Nadrian C. Seeman**  
(1995 Feynman Conference Prize Winner)  
New York University

**Richard Smalley**  
(1996 Nobel Prize for Chemistry)  
Rice University

## • Abstracts and Papers

### Dates:

**Monday June 30:** Abstracts were Due

**Wednesday July 30:** Notification of Acceptance

**Tuesday September 30:** Final Papers Due

### Abstracts:

The **Abstracts for Talks and Posters** presented at the conference are available.

### Publication of papers

Papers will be refereed and those accepted for publication will be published in a special issue of the journal *Nanotechnology*. Al Globus and Deepak Srivastava will serve as guest editors for this issue. Sample articles published in Nanotechnology have been made available on the Web by Ralph Merkle.

**All papers must be submitted in HTML.**

All papers accepted for the conference will be made available on the web, linked from the conference page. For those papers accepted for publication, the web version will also act as a pre-print.

**Index of full papers**. Each full paper is also linked from the respective abstract.

### **Information for presenters about conference abstracts and papers**

---

[Foresight Activities](#) > [Foresight Conferences](#)

---

[Home](#) | [New on this Website](#) | [Site Map](#) | [Search](#)

\* [About Foresight](#) \* | [Nanotechnology](#) | [Web Enhancement](#) | [News](#) | [Events](#) | [Publications](#) | [Prizes & Awards](#)

**GETTING INVOLVED** : [Free Electronic Membership](#) | [Regular Membership](#) | [Become a Senior Associate](#)

---

 Use [CritSuite](#) to comment on this page and to see others' comments.

---

Foresight materials on the Web are ©1986-2001 Foresight Institute. All rights reserved.

Last updated 27 September 2001. The URL of this document is: <http://www.foresight.org/Conferences/MNT05/Nano5.html>

Send requests for information about Foresight Institute activities and membership to [foresight@foresight.org](mailto:foresight@foresight.org).

Send comments and questions about material on this web site and reports of errors to [webmaster@foresight.org](mailto:webmaster@foresight.org).